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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/006,645

Applicant(s)

KEATING ET AL.

Examiner

Craig W Kronenthal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-76 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47, 50, 54-57 and 60-76 is/are rejected.
- 7) ☒ Claim(s) 48, 49, 51-53, 58 and 59 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/01, 9/02, 5/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 is objected to because of the following informalities:

- In line 11 of claim 1, "material information" should be replaced with "information material".

Appropriate correction is required.

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not). Misnumbered claims 19-77 have been renumbered 18-76 respectively. The dependencies have been adjusted accordingly.

3. Claims 43-54, 58, 59, 64, and 75 are objected to because of the following informalities:

- The use of "errored" in all instances within claims 43-54, 58, 59, 64, and 75 is objected to because it is not a word. It is suggested that "errored" be replaced with "erroneous".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 61 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 61, the phrase "or the like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-4, 9-13, 18-21, 26, 28-30, 37-45, 48-50, 54, 56, 60-72, 75, and 76 are rejected under 35 U.S.C. 102(e) as being anticipated by Reed et al. (PN 6,590,996). (hereinafter Reed)

Regarding Claims 1, 28, 40, 65, 70, and 76: Reed discloses an apparatus for embedding data (Fig. 8, 802) in information material (Fig. 8, 808), said data (802) including a plurality of data items, said data items having a different relative importance with respect to each other, said apparatus comprising:

- An encoding processor (Fig. 8, 800) operable to encode each of said data items (802) in accordance with at least one error correction code (800) (col. 15 lines 41-48), said encoded data items (802) including redundant data introduced by said error correction code (800) (col. 15 lines 55-57). [The encoder processor (800) includes an error correction coder that adds error detection bits to each message. Also each message may contain known bits, which are encoded redundantly.]
- A combining processor (Fig. 8, watermark function) operable to combine said encoded data items with said information material (808), wherein said combining processor is operable in combination with said encoding processor to allocate an amount of a limited data embedding capacity provided by said material

information [material information] (col. 15 lines 40-41). [The combining processor is shown in Figure 8 as the watermark function. This watermark function operates to combine the encoded data items/encoded message with the image block (808). The result of this combining processor is the watermarked image block (Fig. 8), which is the material information containing the encoded data items. Also it is inherent that this combining processor allocates an amount of limited data embedding capacity by only embedding the message bits to the image block. The image block acts to limit the area in which a watermark/message/encoded data item is embedded.]

- To generate an amount of said redundant data included in said encoded data items in accordance with said allocation, each of said data items (802) being encoded and embedded to the effect that a proportion of said limited data embedding capacity is allocated to said encoded data items in accordance with said relative importance (col. 15 lines 55-63). [The known bits are redundantly embedded because the embedder gives them higher priority than the other unknown bits. Those bits that have greater priority are more redundantly encoded in the image block which signifies the allotted embedding capacity.]

The analogous arguments made regarding claim 1 are applicable to claims 28, 40, 65, 70, and 76.

Regarding Claims 2 and 11: Reed discloses an apparatus as claimed in claim 1, wherein said encoding processor (800) includes a modulator (Fig. 8, 804) operable to

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generate predetermined data sequences and to encode said data items by modulating said predetermined data sequences with data symbols of said data items (802), and to combine said modulated predetermined data sequences with said information material (col. 15 line 66 – col. 16 line 3). [The spread spectrum modulator (804) is part of the encoding process and is operable to generate a pseudo random number which is a predetermined data sequence. This number/sequence acts as the carrier signal for the message thereby modulating the message (802) with the number/sequence. After modulation the results are combined with the image block (808) by the watermark function. The analogous arguments made regarding claim 2 are applicable to claim 11.]

Regarding Claims 3, 12, and 20: The analogous arguments of claim 2 are applicable to claim 3. The pseudo random number is synonymous with a Pseudo-Random Symbol or Bit Sequence. The analogous arguments of claim 3 are applicable to claim 12 and 20.

Regarding Claims 4, 13, and 21: Reed discloses an apparatus as claimed in claim 1, wherein said data items (Fig. 8, 802) include meta data describing the content or providing an indication of an attribute of said information material in which the data is embedded (col. 4 lines 29-30). [The watermark/message representing the data items to be encoded are disclosed as possibly being copy protection or authentication. Both types of data are meta data that describe the content of the information material or host signal. The analogous arguments made regarding claim 4 are applicable to claims 13 and 21.]

Regarding Claims 9, 18, and 26: Reed discloses an apparatus as claimed in claim 1, wherein said information material is an image (col. 3 lines 57-59). The host signal is described as being an image. The analogous arguments made regarding claim 9 are applicable to claims 18 and 26.

Regarding Claims 10, 29, 41, and 71: Reed discloses an apparatus for embedding data (Fig. 8, 802) in information material (Fig. 8, 808), said data (802) including a plurality of data items, said data items having a different relative importance with respect to each other, said apparatus comprising:

- An encoding processor (Fig. 8, 800) operable to encode each of said data items (802) in accordance with at least one error correction code (800) (col. 15 lines 41-48), said encoded data items (802) including redundant data introduced by said error correction code (800) (col. 15 lines 55-57). [The encoder processor (800) includes an error correction coder that adds error detection bits to each message. Also each message may contain known bits, which are encoded redundantly.]
- A combining processor (Fig. 8, watermark function) operable to combine said encoded data items with said information material (808) in accordance with an application strength, wherein said combining processor is operable in combination with said encoding processor to allocate an amount of a limited data embedding capacity provided by said material information [material information]

(col. 15 lines 40-41). [The combining processor is shown in Figure 8 as the watermark function. This watermark function operates to combine the encoded data items/encoded message with the image block (808). It is inherent in the combining processor that the embedded data have an application strength. The result of this combining processor is the watermarked image block (Fig. 8), which is the material information containing the encoded data items. Also it is inherent that this combining processor allocates an amount of limited data embedding capacity by only embedding the message bits to the image block. The image block acts to limit the area in which a watermark/message/encoded data item is embedded.]

- Each of said data items (802) are encoded and embedded to the effect that said proportion of said limited data embedding capacity and said application strength are allocated to said encoded data items in accordance with said relative importance (col. 15 lines 55-63). [The known bits are redundantly embedded because the embedder gives them higher priority than the other unknown bits. Those bits that have greater priority are more redundantly encoded filling a larger portion of the image block, which signifies the allotted embedding capacity. Reed also discloses the use of a message dependent gain which alters the strength of the message in accordance with its corresponding importance (col. 18 lines 32-33 and 43-44).]

The analogous arguments made regarding claim 10 are applicable to claims 29, 41, and 71.

Regarding Claims 19, 30, 42, and 72: Reed discloses an apparatus for embedding data (Fig. 8, 802) in information material (Fig. 8, 808), said data (802) including a plurality of data items, said data items having a different relative importance with respect to each other, said apparatus comprising:

- An encoding processor (Fig. 8, 800) operable to encode each of said data items (802) (col. 15 lines 41-48). [The encoder processor (800) includes an error correction coder that adds error detection bits to each message.]
- A combining processor (Fig. 8, watermark function) operable to combine said encoded data items with said information material (808), wherein said information material provides a limited data embedding capacity (col. 15 lines 40-41). [The combining processor is shown in Figure 8 as the watermark function. This watermark function operates to combine the encoded data items/encoded message with the image block (808). The result of this combining processor is the watermarked image block (Fig. 8), which is the material information containing the encoded data items. Also it is inherent that this combining processor allocates an amount of limited data embedding capacity by only embedding the message bits to the image block. The image block acts to limit the area in which a watermark/message/encoded data item is embedded.]
- Said encoding processor (800) includes a modulator (Fig. 8, 804) operable to generate predetermined data sequences and to encode said data items by modulating said predetermined data sequences with data symbols of said data

items (802), and to combine said modulated predetermined data sequences with said information material (col. 15 line 66 – col. 16 line 3). [The spread spectrum modulator (804) is part of the encoding process and is operable to generate a pseudo random number which is a predetermined data sequence. This number/sequence acts as the carrier signal for the message thereby modulating the message (802) with the number/sequence. After modulation the results are combined with the image block (808) by the watermark function. The analogous arguments made regarding claim 2 are applicable to claim 11.]

- Wherein said predetermined data sequences are allocated to the effect that a greater amount of spreading of said data items is provided to the more important data items in accordance with said limited data embedding capacity (col. 4 lines 47-49 and col. 16 lines 15-18). [The predetermined data sequences or pseudo random numbers may vary in length which causes various spreads for different messages/data items. Reed explains that the greater the spreading the less perceptible the message. Therefore the messages/data items of greater importance would have greater spreads.]

The analogous arguments made regarding claim 19 are applicable to claims 30, 42, and 72.

Regarding Claims 37, 38 and 39: Reed discloses a signal (Fig. 8, watermarked image block) representing information material in which data has been embedded by an apparatus according to claim 1. The watermarked signal is the combination of the

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information material/image block (Fig. 8, 808) and the data items/message (Fig. 8, 802) (col. 18 lines 42-43). The analogous arguments made regarding claim 37 are applicable to claim 38 and 39.

Regarding Claims 43, 64, 66, 67, 68, 69, and 75: Reed discloses an apparatus for detecting and recovering data embedded in information material, said data comprising a plurality of source data items each having been encoded in accordance with a systematic error correction code to produce encoded data items each comprising the corresponding source data item and redundant data, said encoded data items being embedded in the information material, said apparatus comprising:

- An embedded data detector (Fig. 12) operable to detect and generate a recovered version of said encoded data from said information material (col. 19 lines 21-23).
- An error processor (Fig. 19, 1166 and 1168) operable, for each of said recovered encoded data items, to determine whether said recovered encoded data item is deemed too errored [has too great of an error], and if not (yes path from 1168 - valid), decoding said encoded data item to generate a recovered version of said data item (col. 31 lines 51-53). [The error correction decode (1166) acts as part of the error processor to determine the errors. The valid read (1168) based on the results of the error correction decode acts as part of the error processor to determine if the recovered encoded data item has too great of an error. If the error is not too great the yes path is chosen and the read/decode is done.]

- A data store (Fig. 20, 1222) for storing said recovered version of said data item (col. 32 lines 33-35). [The system bus (Fig. 20, 1223) is connected to the system memory (1222) which allows the recovered data items to be stored.]
- A recovery data processor (Fig. 19, 1170 and 1174) operable, if said error processor determines that one of said recovered encoded data items is deemed too errored (no path from 1168 - invalid), to compare (1170, col. 31 lines 60-66) the source data item of said encoded data item, with at least one other source data item from said data store, and to estimate (1174, col. 32 lines 1-5 and 12-15) said source data item of said errored encoded data item in dependence upon a corresponding value of said at least one other recovered data item. [The evaluate detection value (1170) is the first step of the recovery data processor when it is determined that the error is too great. This step acts as a comparison since it determines a coincidence from top candidates. The invoke translation estimator on next frame (1174) acts as the estimation step which chooses the best available recovered data item for estimating the decoder result.]

The analogous arguments made regarding claim 43 are applicable to claims 64, 66, 67, 68, 69, and 75.

Regarding Claim 44: Reed discloses an apparatus as claimed in claim 43, wherein said error processor (Fig. 19, 1166 and 1168) is operable to determine whether each of said recovered encoded data items is errored [contains too great an error] by estimating the number of errored data symbols [number of data symbols with errors] in each of said

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recovered encoded data items, and to compare said number of errors with a predetermined threshold, said recovered encoded data item being determined as errored if said number of errors is greater than or equal to said threshold (col. 31 lines 51-53). [The error correction decode (1166) performs a CRC which determines the number of data symbols with errors. This estimate is then compared with a threshold, which in Reed's example is 1, however it is understood that the threshold is not limited by this value. If there is one or more errors the read is determined to be invalid meaning the recovered data contains too great an error.]

Regarding Claim 45: Reed discloses an apparatus as claimed in claim 43, wherein said recovery processor is operable to compare said source data item from said errored encoded data item [data item containing too much error] with at least one of a previous and a subsequent decoded and recovered data item, and to replace said source data item of said errored encoded data item in accordance with at least one of said previous or subsequent data items (col. 31 lines 60-66). [The source data item from the invalid read is compared with the top candidates, which are at least one previous decoded data item and one subsequent data item. The loops (Fig. 18, 1124 and 1126) ensure that the comparison includes top candidates from both previous and subsequent data (col. 29 lines 1-5).]

Regarding Claim 46: Reed discloses an apparatus as claimed in claim 45, wherein said recovery processor is operable, if said previous and said subsequent source data items

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have the same value to replace said source data item of said errored encoded data item with the value of said previous or subsequent data items (col. 31 lines 60-66). [The analogous arguments made regarding claim 45 are applicable to claim 46. It is inherent that if top candidates before and after are the same then the combined detection value (Fig. 19, 1170) would be computed to also have that value.]

Regarding Claim 48: Reed discloses an apparatus as claimed in claim 43, comprising an analysis processor operable to compare the content of the information material from which a plurality of recovered source data items and said errored encoded data item have been detected, and to generate data representative of the comparison, wherein said recovery processor is operable to estimate said source data item of said errored encoded data item in dependence upon said data representative of said comparison. [The detection value is generated in the step of evaluating detection value (Fig. 19, 1170) and is the data representative of the comparison (col. 31 lines 60-66). Otherwise the comparison and estimation process explained in the analogous arguments concerning the recovery data processor of claim 43 are applicable to claim 48.]

Regarding Claim 49: Reed discloses an apparatus as claimed in claim 43, wherein each of said source data items comprises a plurality of data fields, and said recovery processor is operable to compare (col. 31 lines 60-66) at least one of said data fields of said errored encoded data item with the corresponding field of said at least one other recovered data item, and to replace (col. 32 lines 2-3) said at least one of said fields of

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said errored encoded data item with the corresponding field of said recovered data item in accordance with said comparison. [The step of evaluating detection value (Fig. 19, 1170) compares vectors representing the source data. Vectors contain a plurality of data fields and therefore to compare vectors data fields of one vector are compared with corresponding data fields of another vector. The step of refining 6D vectors (Fig. 19, 1172) replaces vectors when the read is determined to be invalid. The replacement of a vector with another equivalent sized vector reads on the replacement of at least one corresponding data field.]

Regarding Claim 50: Reed discloses an apparatus as claimed in claim 49, wherein said recovery processor is operable, in dependence upon at least one of said data fields of said source data item being replaced, to determine in combination with said error processor whether said recovered encoded data item in which the data field is replaced is deemed to be too errored, and if not, decoding said encoded data item to form a recovered version of said data item (col. 32 lines 10-12). [After the step of refining 6D vectors (Fig. 19, 1172) the reader is again invoked (Fig. 19, 1178). The reader's (Fig. 19) steps of determining whether the recovered data contains too much error and decoding if not were explained in claim 43. These analogous arguments in claim 43 are applicable to claim 50.]

Regarding Claim 54: Reed discloses an apparatus as claimed in claim 49, comprising an analysis processor operable to compare the content of the information material from

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which a previous data item, a subsequent data item and said errored encoded data items were detected, and to generate data representative of the comparison, wherein said recovery processor is operable to replace said data field of said errored encoded data item which cannot be decoded with the value of said data field from one of said previous and said subsequent data items in dependence upon said comparison data.

[The analogous arguments of claim 45 are applicable to the analysis processor and replacement step of claim 54. Also the analogous arguments of claim 48 are applicable to the generation step of claim 54.]

Regarding Claim 56: The analogous arguments made in claim 4 are applicable to claim 56 concerning the source data being meta data. The analogous arguments made in claim 9 are applicable to claim 56 concerning the types of information material.

Regarding Claim 60: The analogous arguments made in claim 1 are applicable to claim 60.

Regarding Claim 61: The analogous arguments made in claim 4 are applicable to claim 61.

Regarding Claim 62: The analogous arguments made in claim 37 are applicable to claim 62.

Regarding Claim 63: The analogous arguments made in claim 60 are applicable to the embedding apparatus of claim 63. The analogous arguments made in claim 43 are applicable to the detecting and removing apparatus of claim 63.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5, 6, 14, 15, 22, 23 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed in view of James H. Wilkinson and Michael E. Cox ("Tools and Techniques for Globally Unique Content Identification). (hereinafter Wilkinson)

Regarding Claims 5, 14, 22, and 35: Reed discloses an apparatus as claimed in claim 4, but does not disclose the metadata being a UMID. However, Wilkinson discloses the said meta data including a Unique Material Identifier (UMID), said UMID being given a higher predetermined relative importance than other meta data (p. 797, column one, lines 16-24). [Wilkinson explains that the UMID would be embedded in the frame and that additional metadata would be stored on a remote server. This implies that the UMID is of greater importance than other metadata. It would be obvious to one of ordinary skill in the art to use meta data such as a UMID and to give the UMID greater importance because UMIDs can be automatically watermarked and provide linking.

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One would be motivated to make this modification to more efficiently protect copyright information and to increase copyright protection by adding capacity since UMIDs can link to remote storage. The analogous arguments made regarding claim 5 are applicable to claims 14, 22, and 35.]

Regarding Claims 6, 15, and 23: Reed in view of Wilkinson discloses an apparatus as claimed in claim 5. Wilkinson also discloses said UMID including a plurality of data fields each of said fields representing a data item, each of said fields having a different relative importance (p. 797, column 3, Application of UMIDs, lines 1-6). [Wilkinson explains that the UMID material number is commercially the most important part of the UMID shown in Figure 1 on page 796. The analogous arguments made regarding claim 6 are applicable to claims 15 and 23.]

Regarding Claim 57: The analogous arguments made in claim 4 explain why data items would include meta data and the analogous arguments made in claim 5 explain why this meta data would include UMIDs. Together these arguments explain the limitations of claim 57.

9. Claims 7, 16, 24, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed in view of Chen et al. (PN 6,671,387). (hereinafter Chen)

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Regarding Claims 7, 16, and 24: Reed discloses an apparatus as claimed in claim 1, but does not disclose the end of embedding when a limited capacity is reached.

However, Chen discloses a watermarking method wherein said combining processor is operable in combination with said encoding processor not to embed selected data items if said limited capacity has been reached (col. 6 lines 36-46). [Chen explains how a capacity for storing watermark data in image file pixels can be calculated. Chen also explains that only the image pixels with capacities greater than a defined threshold are embedded with watermark data. Chen creates a matrix of only these watermark eligible image pixels and therefore when these pixels are all watermarked the embedding process is terminated. It would be obvious to one of ordinary skill in the art to modify Reed with the teachings of Chen because both are embedding processes interested in enhancing robustness. Furthermore, one would be motivated to make this modification to make the watermark data less perceivable and therefore more robust. The analogous arguments made regarding claim 7 are applicable to claims 16 and 24.]

Regarding Claim 33: The analogous arguments made regarding claim 7 are applicable to claim 33. Reed's use of the word priority establishes that precedence is given to those data items that are more important.

Regarding Claim 34: The analogous arguments made regarding claim 4 are applicable to claim 34.

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Regarding Claim 36: Reed in view of Chen disclose an apparatus as claimed in claim 33, wherein said control processor is arranged to queue at least one data item which is not embedded within said limited data embedding capacity until sufficient data embedding capacity within said limit is available, and controls said combining processor to select at least one queued data item and embeds the selected queued data item in said material information. Chen modifies Reed's embedding to determine the data items to be embedded depending on the capacity which is based on the image block. It is inherent that the data items not embedded in one image block are queued for use in subsequent image blocks.

10. Claims 8, 17, 25, 27, 31, 32, 73, and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed in view of Yamaguchi et al. (Pub. No. US 2002/0154699).

Regarding Claims 8, 17, 25, 31, and 73: Reed discloses an apparatus as claimed in claim 1, comprising a control processor operable to receive data indicative of said relative importance of said data items to be embedded and to control said encoding processor and said combining processor to encode and embed said data items in accordance with said relative importance. [The assignment map (Fig. 8, 806) acts as a control processor to redundantly encode selected bits (col. 16 lines 27-31).] Reed does not disclose the embedding of the control information. However, Yamaguchi discloses a picture decoding apparatus that embeds control information in the information material

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indicative of at least one of the encoding and embedding applied to said data items.

[Yamaguchi teaches a picture coding unit (Fig. 1, 102) which receives and encodes priority information from the priority providing unit (Fig. 1, 101) (p. 3, section [0055], lines 3-4). The transmission control unit (Fig. 1, 103) embeds the control information, which is the priority (p. 3, section [0055], lines 4-6). It would be obvious to one of ordinary skill in the art to modify Reed's embedder to include a transmission control unit (103) which would use the assignment map as priority information. Furthermore one would be motivated to add the control information/priority to the information material to assist in the decoding. Yamaguchi teaches that priority can also be used in decoding and therefore should be embedded to an image. The analogous arguments made regarding claim 8 are applicable to claims 17, 25, 31, and 73.]

Regarding Claims 27, 32, and 74: Reed discloses an apparatus for detecting and recovering data embedded in information material using the apparatus, said apparatus comprising:

- A detection processor (Fig. 12) operable to detect and to generate a recovered version of said embedded encoded data items from said information material (col. 19 lines 21-23).

Reed does not disclose the detection of control information and the decoding of the data items according to relative importance. However Yamaguchi discloses:

- A decoding processor (Fig. 1) operable to decode and to recover said data items in accordance with the encoding applied to said recovered encoded data items

according to the relative importance of said data items, wherein said detection processor is operable to detect and to recover said control information, and in accordance with said control information to decode and to recover said data items (p. 3, section [0058], lines 1-2). [A priority decision unit (Fig. 1, 14) belonging to the decoding processor (Fig. 1) reads the control information. This control information is the basis for selecting which data items to decode (p. 3 section [0065], lines 1-6).]

It would be obvious to one of ordinary skill in the art to modify Reed with the priority decoding taught by Yamaguchi because the data items are encoded with priority information. It is also obvious since Reed teaches the use of ranked image blocks (Fig. 17, 1082) within the detector (col. 28 lines 2-3). Furthermore, one would be motivated to make this modification because data items are of different importance and some are desired before others. The analogous arguments made regarding claim 27 are applicable to claims 32 and 74.

#### ***Allowable Subject Matter***

11. Claims 48, 49, 51-53, 58, and 59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Iwamura (PN 6,807,285) is cited for teaching the embedding of a plurality of information of different importance in an image and performing error correction encoding.
- Matsuzaki et al. (PN 6,522,672) is cited for teaching the assigning of priority to embedded information, spreading the information, error correction encoding the information, and modulating the information.
- Ogawa et al. (PN 6,704,431) is cited for teaching the redundant embedding of information and weighting the watermarks for sequencing.
- Sonoda et al. (PN 6,622,004) is cited for teaching encoded information selection and modulation and considering capacity for the purpose of storing the information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig W Kronenthal whose telephone number is (703) 305-8696. The examiner can normally be reached on 8:00 am - 5:00 pm / Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 306-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

01/14/05  
CWK

**MEHRDAD DASTOURI**  
**PRIMARY EXAMINER**

*Mehrdad Dastouri*